

Dear Dr. Wilson:

I note with interest your finding of organic nitrogen in New Zealand snows at high altitude. It is of course quite likely as you suggest that much or all of this material is of oceanic origin/

However, I wonder if you have given any consideration to the possibility that it is either a volcanic or meteoritic. I would stress the latter since most investigators have tended to neglect the nitrogenous and organic components of meteoritic infall notwithstanding the elementary facts of atomic abundance, (cf. Science, 127:1473-75, June 27 1958).

at high altitudes

Collections/of possibly meteoritic material have been made in Hawaii by Petterson, Nature, 181:330 (1958), and from jet aircraft by some of Whipple's associates at the Harvard College observatory.

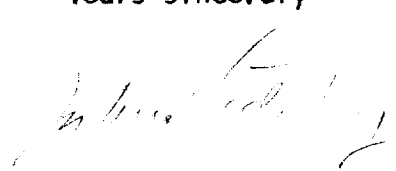
Since you now have this lead, it should be possible to characterize the chemistry of the nitrogen to better define its source. As I understand it, Standard Methods gives 'albuminoid nitrogen' as nonvolatile N converted to NH_3 by alkaline permanganate oxidation. This might well include nitriles as well as organic nitrogen.

The quantities you calculate do come out rather high for my suggestion. However, Petterson reports an infall of about 1 mg/m^2 of Ni or about 4 g. of this element per acre per year. The Ni:N ratio for ~~maxxxx~~ interplanetary material is not known. In the cosmic abundance it is estimated at 1:500 (Urey). That this could give an approximation of 'a few pounds' per acre per year is too good to be true for such number-juggling, and I hope this does not obscure the serious suggestion that some nitrogenous material must come from meteoritic infall, and that surveys such as yours are well suited to help determine how ~~maxxxx~~ much.

Have you any estimates of Na and Cl that might help test the oceanic provenance of your N? These ions might, of course, have a quite different distribution than N.

Yours sincerely

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PS: May I have the favor of a reprint of the present and the detailed future communication?

$1 + \text{Ni} = 58$ $\text{N} = 14$